

Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Algebra 2/Trig: Recursive Sequences

DO NOW:

- a) In mathematics, a list of objects is called a \_\_\_\_\_.
- b) In mathematics, **the sum** of a list of objects is called a \_\_\_\_\_.
- c) Formula to find the *n*th term in an **arithmetic sequence**:
- d) Formula to find the *n*th partial sum of an **arithmetic series**:
- e) Formula to find the *n*th term in a **geometric sequence**:
- f) Formula to find the *n*th partial sum of a **geometric series**:
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- 1) The year is 2011, and Mr. Carman is 46 years old.

$$a_{2011} = 46$$

- 2) When the year is 2012, Mr. Carman will be 47 years old.

$$a_{2012} = 46 + 1 = 47$$

- 3) When the year is 2013, Mr. Carman will be 48 years old.

$$a_{2013} = 47 + 1 = 48$$

- 4) When the year is 2014, Mr. Carman will be 49 years old.

$$a_{2014} = 48 + 1 = 49$$

- 5) How old will Mr. Carman be in the year  $n$ ?

$$a_n = a_{n-1} + 1$$

\*\*\*To find the **current term**, we need to know the **pervious term**.

\*\*\*This is called a **recursive sequence**. In order to figure out  $a_n$ , we will need to know  $a_{n-1}$

The answers to your questions (in order) are: “No”, and “None of your business.”

6) Find the first four terms of the recursive sequence defined below:

$$a_1 = 5$$

$$a_n = a_{n-1} + 3$$

7) Find the first four terms of the recursive sequence defined below:

$$a_1 = 100$$

$$a_n = a_{n-1} - 5$$

8) Find the first four terms of the recursive sequence defined below:

$$a_1 = 100$$

$$a_n = \frac{a_{n-1}}{2}$$

9) Find the first four terms of the recursive sequence defined below:

$$a_1 = -3$$

$$a_n = a_{n-1} - n$$

10) Find the first four terms of the recursive sequence defined below:

$$a_1 = 3$$

$$a_{n+1} = 2a_n + 5$$

11) Find the first six terms of the recursive sequence defined below:

$$a_1 = 1$$

$$a_2 = 1$$

$$a_n = a_{n-1} + a_{n-2}$$

12) Find the first four terms of the recursive sequence defined below:

$$a_1 = 3$$

$$a_n = (-1)^n (5a_{n-1})$$

13) Find the first four terms of the recursive sequence defined below:

$$a_1 = -2$$

$$a_{n+1} = (a_n)^2 + n$$

14) Find the first 5 terms of the recursive sequence defined below:

$$a_1 = 1$$

$$a_2 = 2$$

$$a_n = \frac{a_{n-1} + 2}{a_{n-2} + 1}$$